

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE MAR 1971		2. REPORT TYPE		3. DATES COVERED 00-00-1971 to 00-00-1971	
4. TITLE AND SUBTITLE Culex (Neoculex) nematoides (Dyar and Shannon 1925) An Erroneous Record from the Philippines (Diptera: Culicidae)				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Southeast Asia Mosquito Project, Smithsonian Institution, Washington, DC, 20560				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 3	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Culex (Neoculex) nematoides (Dyar and Shannon 1925)
An Erroneous Record from the Philippines
(Diptera: Culicidae)¹

Sunthorn Sirivanakarn
Southeast Asia Mosquito Project
Department of Entomology
Smithsonian Institution
Washington, D. C. 20560

Culex (Neoculex) nematoides Dyar and Shannon 1925 (Insecutor Inscitiae Mens. 13:84) was described from a male and six females. The abdomen and terminalia of the male are missing. All the specimens bear label No. 28108 USNM. According to the original description, the specimens were from Ludlow's Philippine collections which she left at the Army Medical Museum (Now "Medical Museum, Armed Forces Institute of Pathology," Washington, D. C.) and at her apartment after her death. The specimens were accompanied by the following locality note "Hagthorpe 2 3/4 miles south of hospital, Aug. 5, 1922" to which Dyar and Shannon made the following remark "we have been unable to identify this locality." In the latest revision of the Philippine Culicini by Delfinado (1966, Mem. Amer. Ent. Inst. 7:127-128), the Hagthorpe locality was assumed to be somewhere in the mountain province of Luzon.

In the current revision of the group in the Southeast Asia Mosquito Project, an attempt has been made to clarify this situation. It arose from the fact that we failed to see more specimens of C. nematoides in several major Philippine collections in the past and present, including notably, the collections by W. V. King during 1928-34; Rozeboom, Knight and Laffoon during 1945; E. S. Ross during 1945; and F. E. Baisas during 1964-68. This result heightened our doubt as to the occurrence of C. nematoides in the Philippines and has led us to a prolonged enquiry which is summarized below.

Taxonomically, little has been done with C. nematoides since its original description. Bohart (1945 US Navmed. 580, p. 73) and Delfinado (1966, literature as above), listed it with the Philippine mosquito fauna. The redescription of nematoides by Delfinado, based only on the original material, essentially conforms to that of Dyar and Shannon. Edwards (1932, Gen. Insect. Diptera Fam. Culicidae, Fasc. 194) by placing it with the apicalis group of Neoculex has given perhaps the most meaningful treatment of this species. This led us to a comparative study of all known members of this group including species in North America, Europe, the Mediterranean and in the northern palearctic of Asia.

Because of missing male terminalia in the original material, it is difficult to confirm the exact affinity of nematoides. We have, however, studied details of several general features, including male palpus, antenna and proboscis, female buccopharyngeal armature, texture of scutal scales, presence and extent of scale patches on certain pleural areas and pattern of tergal banding of abdomen. We compared these characters with those of C. territans (Walker 1856) from North

¹ This work was supported by Research Contract No. DA-49-193-MD-2672 from the U. S. Army Medical Research and Development Command, Office of the Surgeon General.

America and Europe and all other known North American forms as revised by Bohart (1948, Ann. Ent. Soc. Amer. 51(3): 330-345) and finally with C. rubensis Sasa and Takahashi 1948 from Japan and Korea. This study led us to the rather surprising fact that the nematoides specimens resemble those of C. territans so closely that there is no doubt that they are the same species. This result has been substantiated by further extensive search for information related to the dubious label "Hagthorpe" which accompanies the specimens.

Our attempts to locate Hagthorpe from maps, gazeteers, the Board of Geographical Names and other sources of local and personal names were unsuccessful until we enquired from the US Army Topographic Command who reported that Hagthorpe was in E. Riding, Yorkshire, England. This report prompted us to write Dr. P. F. Mattingly to confirm the place. He visited the area and has made a report of this locality. He also pointed out that the correct spelling of this locality is "Hagthorpe", not "Hagthorpe" as in the original label. He writes as follows:

"Hagthorpe is a locality in the Vale of York comprising no more than a couple of buildings near the point at which the River Derwent is crossed by the road from Selby to Howden (0 56' 16"W. 53 45'37"N.). The area as a whole has been drained and reclaimed for agriculture and would probably not be suitable for C. territans at the present time. Formerly, however, there were extensive marshes and at the time in question it may have been distinctly favourable. As against this the nearest hospital, so far as I can gather, would have been the former isolation hospital at Howden which is about 4 miles east of Hagthorpe instead of 2 3/4 miles north as the label would suggest." There seems little doubt that this is the original locality of nematoides.

All related information as discussed above has strongly convinced me that the record of C. nematoides (= territans) from the Philippines is an error. Our present knowledge of the character of the Neoculex fauna in Southeast Asia has also strongly suggested that C. territans does not occur in the Philippines. This species is known only in North America and in several countries in Europe in which it is rather common and appears to be dominant in some areas. The common occurrence of C. territans, formerly known as apicalis, in England is very well supported by the following papers: Classey (1944, Entomologist 77:98-99. 1946, British Mosquitoes, Proc. South London Ent. Nat. Hist. Soc. p. 113) and by Macan (1951, Mosquito records from Southern part of the Lake District, Ent. Gazette 2:141-147). In North America, its occurrence and biology has been fairly well documented by a number of workers.

Considering the whole situation as briefly outlined above, we are left with two alternative explanations about the presence of these specimens in the Ludlow collections. Firstly, it could be that they were sent to her from someone in England and eventually got mixed up with her collections from the Philippines. This seems the most likely possibility in spite of the absence of specific mention in her files of correspondence. Secondly, the specimens could have been collected in N. America and then mislabeled as coming from Hagthorpe. Readers of this note may be able to shed some further light on the subject.

I thank Dr. Alan Stone who suggested that I should write this report and for allowing me to examine the entire reference collection of Neoculex at USNM. I am very much indebted to Dr. Botha de Meillon for all the enquiries which he

kindly undertook to obtain information about "Hagthorpe", and to the Commanding Officer, U. S Army Topographic Command who finally ran the place down, Miss H. R. Purtle, Acting Curator of the Medical Museum of the Armed Forces Institute of Pathology very kindly went to much trouble to examine early correspondence of Miss Ludlow which confirmed the fact that she had contacts in England and received specimens from there and last but not least, I wish to thank Dr. P. F. Mattingly for his painstaking study in locating and visiting "Hagthorpe" and in supplying me with literature about the biology of C. territans in England.